PUTTING THE BEES TO BED

A radio talk by Mr. James I. Hambleton, senior apiculturist, Bureau of Entomology, delivered through Station WRC and 32 other stations associated with the National Broadcasting Company, Friday, October 25, 1929.

In the fall of the year when the forests take on their brilliant colors and the first light frosts tinge the persimmons with flavor, insects become sluggish and cease their activity. No one worries much about insect damage then; spraying operations have stopped because everyone knows that with the coming of winter the active life of most members of the insect family suddenly ceases. Many insects crawl into burrows, or under pieces of bark and debris left in the fields, where they hibernate, taking no food during the long winter sleep, and giving little care to temperature conditions. Other insects die outright in the fall, but to prevent a break in their cycle of immortality leave behind them eggs, which hatch with the coming of spring, again to take up the thread of life.

The honeybee, however, is an outstanding exception to this general rule, for it does not hibernate. It consumes food all winter, this consumption of food being essential, as the honeybee must maintain for itself in the hive a temperature which does not fall below 57° Fahrenheit.

Bees must be put to bed with care, and when winter comes they must go to bed no matter where they are. Going to bed for the bees is not merely a matter of keeping warm. It is a rest for the colony and particularly for the queen. During the honey-gathering season worker bees, toiling through the long hot summer days from early morning until late at night, literally wear themselves out, with the result that their busy lives come to an end within six weeks after birth. Unlike most animals, the honeybee when it emerges from its brood-nest is endowed with maximum strength. Each day it labors it becomes weaker until at the end of six weeks of hard work in the honey harvest its wings will be frayed and torn, its soft yellow hair worn away so that it has become dark, bald and shiny. The queenbee lives much longer, perhaps because her only task is to lay eggs, all otherduties and responsibilities being taken care of by her numerous daughters. But when it is recalled that a single queenbee will lay a thousand eggs or more a day and maintain this rate for days and months at a time, it is easy to realize that she also requires a rest. As the winter is the only time she can put aside her important work, it is easy to understand that if the queen is to be kept warm and well cared for during the winter months, that she must be surrounded with thousands of young bees possessed with full strength and vigor. The coming of winter is not exactly the beginning of a rest period for the worker bees. Throughout all the long months of winter they must maintain a uniform temperature in the hive, and this arduous task is beyond the powers of old bees, worn threadbare so to speak, in the summer's harvest.

It seems difficult to realize that the honey producer in the sunny South has a winter problem just as serious as the honey producer in the North. In the South the bees are constantly active, not in the field because there are no flowers to be visited, but because they must generate heat within the hive whenever the outside temperature falls below 57° F, and to do this the colony must consume honey. While it is not necessary for the bees in the South

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to generate as much heat as do bees in the North, the occurrence of each warm day arouses the colony to considerable activity which repeated often seriously weakens the colony. After the queen stops laying in the fall the young bees must carry on the activity of the colony until the queen starts laying again the next spring. The bees raised in the fall, therefore, instead of dying at the end of six weeks must live for several months, and to do this and retain the requisite amount of strength in the spring, it is essential that the winter period be as free from activity as possible. In the North increased activity is brought about primarily by low temperatures; in the South, strangely enough, unnecessary activity is brought about by warm temperatures.

One of the problems of the honey producer in the South, therefore, is to manage his colonies in the fall in such a way that each hive will contain a large proportion of young bees, which have done practically no work. Young bees can withstand more of this useless devitalizing activity, brought on by the warm winter days, than can old bees.

If the winter colony is not provided with stores of good quality the bees are apt to have dysentery, which also increases the restlessness of the colony, gradually weakening it. Still another factor plays an important part in the successful wintering of bees, namely, the amount of food with which the colony is provided at the beginning of the winter period. Bees must have food, and plenty of it, for if the supply gives out for evan a single day the colony is doomed. Taking away the food deprives the colony of its ability to regulate the temperature, and once the temperature falls below the critical point the death of the colony quickly follows.

In the North, in localities where the temperature falls below freezing during the major part of the winter, the honey producer has a slightly different problem to meet. If the colonies are left outdoors in unprotected hives, the bees must consume great quantities of stores in order to produce the amount of heat necessary to maintain the winter cluster at 57° F. or above. This process, which is literally a burning up of food, rapidly wears out the tissues of the wintering bees, with the result that they become aged prematurely. It, therefore, behooves the honey producer in the North to provide such protection that the bees will have to work at little as possible in order to maintain the correct colony temperature. This is done by placing the bees in underground cellars, where the natural temperature varies between 42 and 50° F; by wrapping the hives with tar paper, blankets, etc., or by placing the hives in packing cases filled with sawdust, leaving but a small opening to permit the entrance of fresh air, the elimination of waste products, and for the exit of bees on warm days.

In the North, South, East and West, the same rule holds; namely, the colony must start the beginning of the winter period with an ample proportion of young bees, headed with a young vigorous queen, and at least 40 or 50 pounds of the very best quality of honey, and in the North protection against the low temperatures.

Bee cellars must be kept dark so that the bees will not attempt to fly for when bees leave the hive in the cellar they never return to it. Moreover, it is most imperative that the cellar-wintered bees have only good stores, for it happens that the honeybee can only void its feces while in flight. The

stores must be of such quality that it will not be necessary for the bees to fly to rid themselves of the winter's accumulation of indigestible matter before they are placed outdoors on their summer stands at the time the willow blossoms in the spring.

It is conservatively estimated that the beekeeping industry suffers an annual winter loss of at least 10 per cent of all colonies because of poor wintering, a loss which is avoidable. Perhaps the greatest single reason for this loss is the habit of removing too much honey from the colony at the close of the harvest. Most of the winter lossis due to starvation, and to severe temperatures in the North, and because of the unnecessary activity of the bees during the flowerless season in the South. If honey producers could learn that bees never consume more honey than they require for their needs, and would leave the hives heavy with honey in the fall much of the wintering troubles would disappear. This is the best insurance known for a bountiful crop of honey.